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(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AB, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
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PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
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kind of regional protection available): ARIPO (BW, GH,
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FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

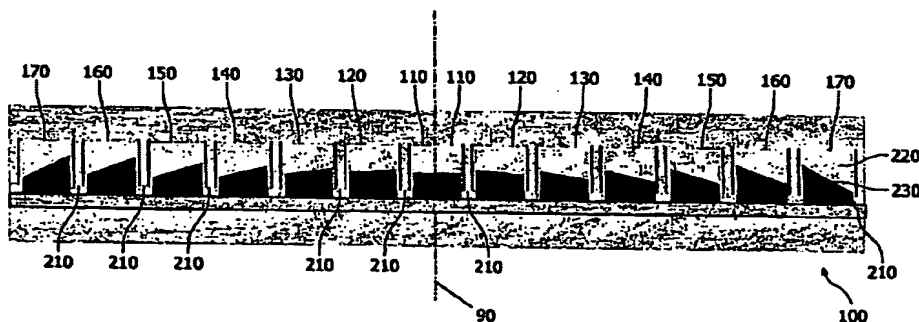
— as to applicant's entitlement to apply for and be granted a
patent (Rule 4.17(ii)) for the following designations AE,
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,
CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE,
EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,
JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,
MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM,
PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ,
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SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ,
BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE,
BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,
IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
SN, TD, TG)

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: VARIABLE LENS



(57) Abstract: A variable lens having an optical axis is described. The lens comprises a plurality of annuli located around the optical axis. Each annulus has respective side walls defining a chamber containing a first fluid and a second fluid in contact over a meniscus. The fluids are substantially immiscible and have different refractive indices. At least one of the annuli comprises at least one electrode for altering the configuration of the meniscus.

INTERNATIONAL SEARCH REPORT

International Application No

IB2004/051154

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G02B3/14 G02B3/08 G02B26/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 99/18456 A (UNIV JOSEPH FOURIER ; BERGE BRUNO (FR); PESEUX JEROME (FR)) 15 April 1999 (1999-04-15) cited in the application the whole document	1-17
Y	US 6 552 860 B1 (ALDEN RAY M) 22 April 2003 (2003-04-22) abstract column 4, line 56 - column 5, line 34 figures 7,9,12	1-17
A	EP 0 257 675 A (PHILIPS NV) 2 March 1988 (1988-03-02) column 5, lines 10-24 column 5, lines 34-52 figures 3,4	1-17
	----- -/-	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

19 October 2004

Date of mailing of the international search report

27/10/2004

Name and mailing address of the ISA

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Authorized officer

Mollenhauer, R

INTERNATIONAL SEARCH REPORT

International Application No

IB2004/051154

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002/176148 A1 (NOTO GORO ET AL) 28 November 2002 (2002-11-28) abstract -----	1, 12, 16, 17
A	US 4 601 545 A (KERN SEYMOUR P) 22 July 1986 (1986-07-22) column 2, lines 22-28 column 4, lines 10-49 column 6, lines 33-51 figure 7 -----	1, 12, 16, 17
A	EP 0 560 664 A (THOMSON CSF) 15 September 1993 (1993-09-15) abstract -----	1, 12, 16, 17
A	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 10, 10 October 2002 (2002-10-10) -& JP 2002 169005 A (CANON INC), 14 June 2002 (2002-06-14) abstract -----	1, 12, 16, 17

INTERNATIONAL SEARCH REPORT

International Application No

IB2004/051154

Information on patent family members

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9918456	A	15-04-1999	FR 2769375 A1 AT 214164 T CA 2306249 A1 DE 69804119 D1 DE 69804119 T2 EP 1019758 A1 ES 2171041 T3 WO 9918456 A1 JP 2001519539 T US 6369954 B1	09-04-1999 15-03-2002 15-04-1999 11-04-2002 28-11-2002 19-07-2000 16-08-2002 15-04-1999 23-10-2001 09-04-2002
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US 4601545	A	22-07-1986	AU 4431085 A CA 1223950 A1 EP 0181395 A1 JP 61502221 T WO 8505466 A1	13-12-1985 07-07-1987 21-05-1986 02-10-1986 05-12-1985
EP 0560664	A	15-09-1993	FR 2688598 A1 EP 0560664 A1	17-09-1993 15-09-1993
JP 2002169005	A	14-06-2002	NONE	

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference PHNL030835WO	FOR FURTHER ACTION		See item 4 below
International application No. PCT/IB2004/051154	International filing date (<i>day/month/year</i>) 07 July 2004 (07.07.2004)	Priority date (<i>day/month/year</i>) 14 July 2003 (14.07.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant KONINKLIJKE PHILIPS ELECTRONICS N.V.			

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).																								
2.	This REPORT consists of a total of 6 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
<input checked="" type="checkbox"/>	Box No. I	Basis of the report																							
<input checked="" type="checkbox"/>	Box No. II	Priority																							
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability																							
<input type="checkbox"/>	Box No. IV	Lack of unity of invention																							
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																							
<input type="checkbox"/>	Box No. VI	Certain documents cited																							
<input type="checkbox"/>	Box No. VII	Certain defects in the international application																							
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44 <i>bis</i> .3(c) and 93 <i>bis</i> .1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44 <i>bis</i> .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 740 14 35	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Date of issuance of this report 16 January 2006 (16.01.2006)</td> </tr> <tr> <td style="padding: 2px;">Authorized officer <div style="text-align: center; font-weight: bold;">Idhir Britel</div></td> </tr> <tr> <td style="padding: 2px;">Telephone No. +41 22 338 70 60</td> </tr> </table>	Date of issuance of this report 16 January 2006 (16.01.2006)	Authorized officer <div style="text-align: center; font-weight: bold;">Idhir Britel</div>	Telephone No. +41 22 338 70 60
Date of issuance of this report 16 January 2006 (16.01.2006)				
Authorized officer <div style="text-align: center; font-weight: bold;">Idhir Britel</div>				
Telephone No. +41 22 338 70 60				

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 26 OCT 2004

PCT

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To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/B2004/051154

International filing date (day/month/year)
07.07.2004

Priority date (day/month/year)
14.07.2003

International Patent Classification (IPC) or both national classification and IPC
G02B3/14, G02B3/08, G02B26/02

Applicant
KONINKLIJKE PHILIPS ELECTRONICS N.V.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

Mollenhauer, R

Telephone No. +31 70 340-3920



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2004/051154

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2004/051154

Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

;

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-17
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-17
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1: WO 99/18456 A (UNIV JOSEPH FOURIER ; BERGE BRUNO (FR); PESEUX JEROME (FR)) 15 April 1999 (1999-04-15)
D2: US-B-6 552 8601 (ALDEN RAY M) 22 April 2003 (2003-04-22)
D3: EP-A-0 257 675 (PHILIPS NV) 2 March 1988 (1988-03-02)
D4: US 2002/176148 A1 (NOTO GORO ET AL) 28 November 2002 (2002-11-28)
D5: US-A-4 601 545 (KERN SEYMOUR P) 22 July 1986 (1986-07-22)
D6: EP-A-0 560 664 (THOMSON CSF) 15 September 1993 (1993-09-15)

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1,12,16,17 does not involve an inventive step in the sense of Article 33(3) PCT.
- 1.a The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):
A variable lens (fig.6) having an optical axis (O) and two side walls (12) defining a chamber containing a first fluid (11) and a second fluid (13) in contact over a meniscus (A,B), the fluids being substantially immiscible (see abstract) and having different refractive indices (page 2 line 25)
and having at least one electrode (75) for altering the configuration of the meniscus (see abstract).
- 1.b The subject-matter of claim 1 therefore differs from this known variable lens in that:
 - the lens comprises a plurality of annuli, each annulus having respective side walls defining a chamber containing said two liquids
 - at least one annulus comprises an electrode for altering the meniscus configuration

The objective problem to be solved by the present invention may therefore be

regarded as obtaining a multi-element variable lens, the characteristics of at least one element being adjustable.

- 1.c The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

D1 page 10 lines 30-31 explicitly mentions the possibility of arranging an array of variable lenses. Therefore, in order to solve the objective problem, the person skilled in the art would also consider other arrays of variable lenses known from the prior art, e.g. the one disclosed in document D2.

D2 discloses an array of variable lenses comprising a plurality of annuli (fig.7) located around the optical axis, each annulus having respective side walls and defining a chamber containing a first and a second fluid of different refractive indices (col 7 lines 60 - col 8 line 9), the optical characteristics of each annulus being adjustable by the respective fluid pressure (col 8 lines 20-23).

Consequently, combination of these features from D2 with the variable lens of D1 leads to the same features as present claim 1, thereby solving the same objective problem.

Accordingly, claim 1 **does not involve an inventive step**.

A similar argumentation can be done by combining D1 with D3 (fig.3&4).

- 1.d The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent claims 12,16,17, which therefore are also considered not inventive.
2. Dependent claims 2-11,13-15 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect inventive step, see documents D1-D6 and the corresponding passages cited in the search report.